

BUSH HOG®

MODEL GT48 Gasoline Powered Trailed Rotary Cutter Operator's Manual



ASSEMBLY • OPERATION • MAINTENANCE

CONGRATULATIONS!

You have invested in the best implement of its type on the market today.

The care you give your Bush Hog implement will greatly determine your satisfaction with its performance and its service life. We urge a careful study of this manual to provide you with a thorough understanding of your new implement before operating, as well as suggestions for operation and maintenance.

If your manual should become lost or destroyed, Bush Hog will be glad to provide you with a new copy. Order from Bush Hog, 2501 Griffin Ave., Selma, Alabama, 36703. Most of our manuals can also be downloaded from our website at www.bushhog.com.

As an authorized Bush Hog dealer, we stock genuine Bush Hog parts which are manufactured with the same precision and skill as our original equipment. Our trained service personnel are well informed on methods required to service Bush Hog equipment, and are ready and able to help you.

Should you require additional information or assistance, please contact us.

YOUR AUTHORIZED
BUSH HOG DEALER

BECAUSE BUSH HOG MAINTAINS AN ONGOING
PROGRAM OF PRODUCT IMPROVEMENT, WE
RESERVE THE RIGHT TO MAKE IMPROVEMENTS IN
DESIGN OR CHANGES IN SPECIFICATIONS WITH-
OUT INCURRING ANY OBLIGATION TO INSTALL
THEM ON UNITS PREVIOUSLY SOLD.

BECAUSE OF THE POSSIBILITY THAT SOME
PHOTOGRAPHS IN THIS MANUAL WERE TAKEN OF
PROTOTYPE MODELS, PRODUCTION MODELS MAY
VARY IN SOME DETAIL. IN ADDITION, SOME
PHOTOGRAPHS MAY SHOW SHIELDS REMOVED
FOR PURPOSES OF CLARITY. **NEVER OPERATE**
THIS IMPLEMENT WITHOUT ALL SHIELDS IN PLACE.

GT 48

Operator's Manual

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RETAIL CUSTOMER'S RESPONSIBILITY UNDER THE BUSH HOG WARRANTY

It is the Retail Customer and/or Operator's responsibility to read the Operator's Manual, to operate, lubricate, maintain and store the product in accordance with all instructions and safety procedures. Failure of the operator to read the Operator's Manual is a misuse of this equipment.

It is the Retail Customer and/or Operator's responsibility to inspect the product and to have any part(s) repaired or replaced when continued operation would cause damage or excessive wear to other parts or cause a safety hazard.

It is the Retail Customer's responsibility to deliver the product to the authorized Bush Hog Dealer, from whom he purchased it, for service or replacement of defective parts which are covered by warranty. Repairs to be submitted for warranty consideration must be made within forty-five (45) days of failure.

It is the Retail Customer's responsibility for any cost incurred by the Dealer for traveling to or hauling of the product for the purpose of performing a warranty obligation or inspection.



LIMITED WARRANTY



Bush Hog warrants to the original purchaser of any new Bush Hog equipment, purchased from an authorized Bush Hog dealer, that the equipment be free from defects in material and workmanship for a period of one (1) year for non-commercial, state, and municipalities' use and ninety (90) days for commercial use from date of retail sale. The obligation of Bush Hog to the purchaser under this warranty is limited to the repair or replacement of defective parts.

Replacement or repair parts installed in the equipment covered by this limited warranty are warranted for ninety (90) days from the date of purchase of such part or to the expiration of the applicable new equipment warranty period, whichever occurs later. Warranted parts shall be provided at no cost to the user at an authorized Bush Hog dealer during regular working hours. Bush Hog reserves the right to inspect any equipment or parts which are claimed to have been defective in material or workmanship.

DISCLAIMER OF IMPLIED WARRANTIES & CONSEQUENTIAL DAMAGES

Bush Hog's obligation under this limited warranty, to the extent allowed by law, is in lieu of all warranties, implied or expressed, **INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE** and any liability for incidental and consequential damages with respect to the sale or use of the items warranted. Such incidental and consequential damages shall include but not be limited to: transportation charges other than normal freight charges; cost of installation other than cost approved by Bush Hog; duty; taxes; charges for normal service or adjustment; loss of crops or any other loss of income; rental of substitute equipment, expenses due to loss, damage, detention or delay in the delivery of equipment or parts resulting from acts beyond the control of Bush Hog.

THIS LIMITED WARRANTY SHALL NOT APPLY:

1. To vendor items which carry their own warranties, such as engines, tires, and tubes.
2. If the unit has been subjected to misapplication, abuse, misuse, negligence, fire or other accident.
3. If parts not made or supplied by Bush Hog have been used in connection with the unit, if, in the sole judgement of Bush Hog such use affects its performance, stability or reliability.
4. If the unit has been altered or repaired outside of an authorized Bush Hog dealership in a manner which, in the sole judgement of Bush Hog, affects its performance, stability or reliability.
5. To normal maintenance service and normal replacement items such as gearbox lubricant, hydraulic fluid, worn blades, or to normal deterioration of such things as belts and exterior finish due to use or exposure.
6. To expendable or wear items such as teeth, chains, sprockets, belts, springs and any other items that in the company's sole judgement is a wear item.

NO EMPLOYEE OR REPRESENTATIVE OF BUSH HOG IS AUTHORIZED TO CHANGE THIS LIMITED WARRANTY IN ANY WAY OR GRANT ANY OTHER WARRANTY UNLESS SUCH CHANGE IS MADE IN WRITING AND SIGNED BY BUSH HOG'S SERVICE MANAGER, 2501 GRIFFIN AVE., SELMA, ALABAMA 36703.



Record the model number, serial number and date purchased. This information will be helpful to your dealer if parts or service are required.

MODEL NUMBER _____

MAKE CERTAIN THE WARRANTY INFORMATION
HAS BEEN FILED WITH BUSH HOG / SELMA, ALABAMA

SERIAL NUMBER _____

DATE OF RETAIL SALE _____

DEALER PREPARATION CHECK LIST

GT 48 Rotary Cutter

BEFORE DELIVERING MACHINE — The following check list should be completed.
Use the Operator's Manual as a guide.

ASSEMBLY

- 1. Axle assembly
- 2. Tongue assembly
- 3. Throttle assembly

ENGINE SERVICE (Refer to Engine Owner's Manual)

- 1. Oil reservoir filled
- 2. Gas tank filled

GENERAL

- 1. All shields in place
- 2. All safety decals legible (If damaged, Bush Hog will furnish free upon request)
- 3. All bolts tight (Including blade bolts)
- 4. Machine operates properly
- 5. Overall condition good
- 6. Operator's Manual and Engine Manual was delivered to owner, and he has been instructed on the safe and proper use of cutter.
- 7. Kill switch cord included
- 8. Warranty information has been filed with Bush Hog Selma, Alabama.

Dealer's
Signature _____

Purchaser's
Signature _____

THIS CHECKLIST TO REMAIN IN OWNER'S MANUAL
It is the responsibility of the dealer to complete the procedures listed
above before delivery of this implement to the customer.

Safety Alert Symbol



This Safety Alert Symbol means: **“ATTENTION! BECOME ALERT!
YOUR SAFETY IS INVOLVED!”**

This symbol is used to call attention to safety precautions that should be followed by the operator to avoid accidents. When you see this symbol, carefully read the message that follows and heed its advice. Failure to comply with safety precautions could result in death or serious bodily injury.

Safety Signs *Signal Words*

The signal words **DANGER**, **WARNING**, and **CAUTION** are used on the equipment safety signs. These words are intended to alert the viewer to the existence and the degree of hazard seriousness.



DANGER

This signal word indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury.

White letters on **RED**



WARNING

This signal word indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury

It may also be used to alert against unsafe practices.

Black letters on **ORANGE**



CAUTION

This signal word indicates a potentially hazardous situation exist which, if not avoided, may result in minor or moderate injury.

It may also be used to alert against unsafe practices.

Black letters on **YELLOW**

IMPORTANT SAFETY PRECAUTIONS

This symbol is used to call attention to safety precautions that should be followed by the operator to avoid accidents. When you see this symbol, carefully read the message that follows and heed its advice. Failure to comply with safety precautions could result in death or serious bodily injury.



In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel in the operation, transport, maintenance and storage of equipment. Lack of attention to safety can result in accident, personal injury, reduction of efficiency and worst of all—loss of life. Watch for safety hazards and correct deficiencies promptly. Use the following safety precautions as a general guide to safe operations when using this machine. Additional safety precautions are used throughout this manual for specific operating and maintenance procedures. Read this manual and review the safety precaution information often until you know the limitations.

1. Read the Operator's Manual. (Persons who cannot read must have the information explained) Failure to read the Operator's Manual is considered a misuse of this equipment.
2. Become familiar with all the machine's controls and all the caution, warning and danger decals affixed to the machine before attempting to start or operate.
3. Before starting or operating the machine, make a walk around inspection and check for obvious defects such as loose mounting bolts and damaged components. Correct any deficiency before starting.
4. Do not allow children to operate the cutter. Do not allow adults to operate it without proper instruction.
5. Do not carry passengers.
6. Keep the area of operation clear of all persons, particularly small children and pets. The operator should cease mowing whenever anyone comes within the operating area.
7. Clear the work area of objects which might be picked up and thrown.
8. Stop the cutter engine, towing vehicle engine, and set towing vehicle parking brake before leaving operator's position.
9. Stop the cutter engine, towing vehicle engine, disconnect spark plug wire, set towing vehicle brake, and listen to make certain cutter blade has stopped rotating before making any repairs or adjustments.
10. Stop cutter engine when transporting or not in use.
11. Take all possible precautions when leaving the vehicle unattended, such as shifting into neutral, setting the parking brake, stopping both engines and removing the key.
12. Do not stop, start or turn suddenly when going uphill or downhill. Mow up and down the face of slopes, never across the face.
13. Reduce speed and exercise extreme caution on slopes and in sharp turns to prevent tipping or loss of control. Be especially cautious when changing direction on slopes.
14. Stay alert for holes, rocks, stumps and roots in the terrain and other hidden hazards.
15. Use only approved drawbar hitch points.
16. Do not turn sharply. Use care when backing.
17. Use counterweight(s) or wheel weights when suggested in the towing vehicle owner's manual.
18. Handle gasoline with care - it is highly flammable.
 - A. Use approved gasoline container.
 - B. Never remove the fuel cap of, or add gasoline to, a running or hot engine, or fill the fuel tank indoors. Wipe up spilled gasoline.
 - C. Open doors if the engine is running in the garage - exhaust fumes are dangerous. Do not run the engine indoors.

These precautions are continued on following page.

19. Keep the towing vehicle and cutter in good operating condition and keep safety devices in place.
20. Keep all nuts, bolts and screws tight to be sure the equipment is in safe working condition.
21. Never store the equipment with gasoline in the tank inside a building where fumes may reach an open flame or spark. Allow the engine to cool before storing in any enclosure.
22. To reduce fire hazard, keep the engine free of grass, leaves or excessive grease.
23. Do not change the engine governor settings or overspeed the engine.
24. Mow only in daylight or in good artificial light.
25. Never adjust height or leveling linkage while the engine is running.
26. Check the blade mounting bolts for proper tightness at frequent intervals.
27. Stop cutter engine before backing up. Do not cut in reverse unless absolutely necessary and then only after careful observation of the entire area behind the mower.
28. Do not operate the equipment when barefoot or wearing open sandals. Always wear substantial footwear.
29. Stop the cutter engine and watch out for traffic when crossing gravel drives, walks or roads.
30. After striking a foreign object, stop the cutter engine, remove the wire from the spark plug, thoroughly inspect the cutter for any damage and repair the damage before restarting and operating.
31. If the cutter should start to vibrate abnormally, stop the engine and check immediately for the cause. Vibration is generally a warning of trouble.
32. Never operate the cutter without proper guards, plates or other safety protective devices in place.
33. Wear personal protective equipment such as, but not limited to, protection for eyes, ears, feet, hands and head when operating or repairing the equipment. Do not wear loose clothing or jewelry that may catch on equipment moving parts.

IMPORTANT FEDERAL LAWS AND REGULATIONS* CONCERNING EMPLOYERS, EMPLOYEES AND OPERATIONS.

*(This section is intended to explain in broad terms the concept and effect of the following federal laws and regulations. It is not intended as a legal interpretation of the laws and should not be considered as such).

U.S. Public Law 91-596 (The Williams-Steiger Occupational and Health Act of 1970) OSHA

This Act Seeks:

“...to assure so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources...”

DUTIES

Sec. 5 (a) Each employer—

- (1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;
- (2) shall comply with occupational safety and health standards promulgated under this Act.
(b) Each employee shall comply with occupational safety and health standards and all rules, regulations and orders issued pursuant to this Act which are applicable to his own actions and conduct.

OSHA Regulations

Current OSHA regulations state in part: “At the time of initial assignment and at least annually thereafter, the employer shall instruct every employee in the safe operation and servicing of all equipment with which the employee is, or will be involved.” These will include (but are not limited to) instructions to:

Keep all guards in place when the machine is in operation;

Permit no riders on equipment;

Stop engine, disconnect the power source, and wait for all machine movement to stop before servicing, adjusting, cleaning or unclogging the equipment, except where the machine must be running to be properly serviced or maintained, in which case the employer shall instruct employees as to all steps and procedures which are necessary to safely service or maintain the equipment.

Make sure everyone is clear of machinery before starting the engine, engaging power, or operating the machine.

EMPLOYEE TRACTOR OPERATING INSTRUCTIONS:

1. Securely fasten your seat belt if the tractor has a ROPS.
2. Where possible, avoid operating the tractor near ditches, embankments, and holes.
3. Reduce speed when turning, crossing slopes, and on rough, slick, or muddy surfaces.
4. Stay off slopes too steep for safe operation.
5. Watch where you are going, especially at row ends, on roads, and around trees.
6. Do not permit others to ride.
7. Operate the tractor smoothly - no jerky turns, starts, or stops.
8. Hitch only to the drawbar and hitch points recommended by tractor manufacturers.
9. When tractor is stopped, set brakes securely and use park lock if available.

Child Labor Under 16 Years Old

Some regulations specify that no one under the age of 16 may operate power machinery. It is your responsibility to know what these regulations are in your own area or situation. (Refer to U.S. Dept. of Labor, Employment Standard Administration, Wage & Home Division, Child Labor Bulletin #102.)

SECTION I

INTRODUCTION AND DESCRIPTION

1-1 INTRODUCTION

We are pleased to have you as a Bush Hog customer. Your Model GT 48 Rotary Cutter has been carefully designed to give maximum service with minimum down time. This manual is provided to give you the necessary operating and maintenance instructions for keeping your rotary cutter in top operating condition. Please read this manual thoroughly. Understand what each control is for and how to use it. Observe all safety precautions decaled on the machine and noted throughout the manual for safe operation of implement. The information must be explained to those users or operators who cannot read. If any assistance or additional information is needed, contact your authorized Bush Hog dealer.

NOTE

All references made to right, left, top, bottom, front or rear are as viewed facing the direction of travel with implement properly attached to towing vehicle.

1-2 DESCRIPTION

The GT 48 Rotary Cutter is equipped with a 13 H.P. Honda engine with electric start and spark arrestor. It is designed primarily for use with 4 wheeled, all terrain vehicles (ATVs) and garden tractors. It

attaches to the towing vehicle drawbar using a ball hitch and pin. The 48", uplift blade bar assembly will cut pasture grass and weeds up to 3/4" diameter. This model rotary cutter is not meant for precision yard mowing or heavy brush cutting.

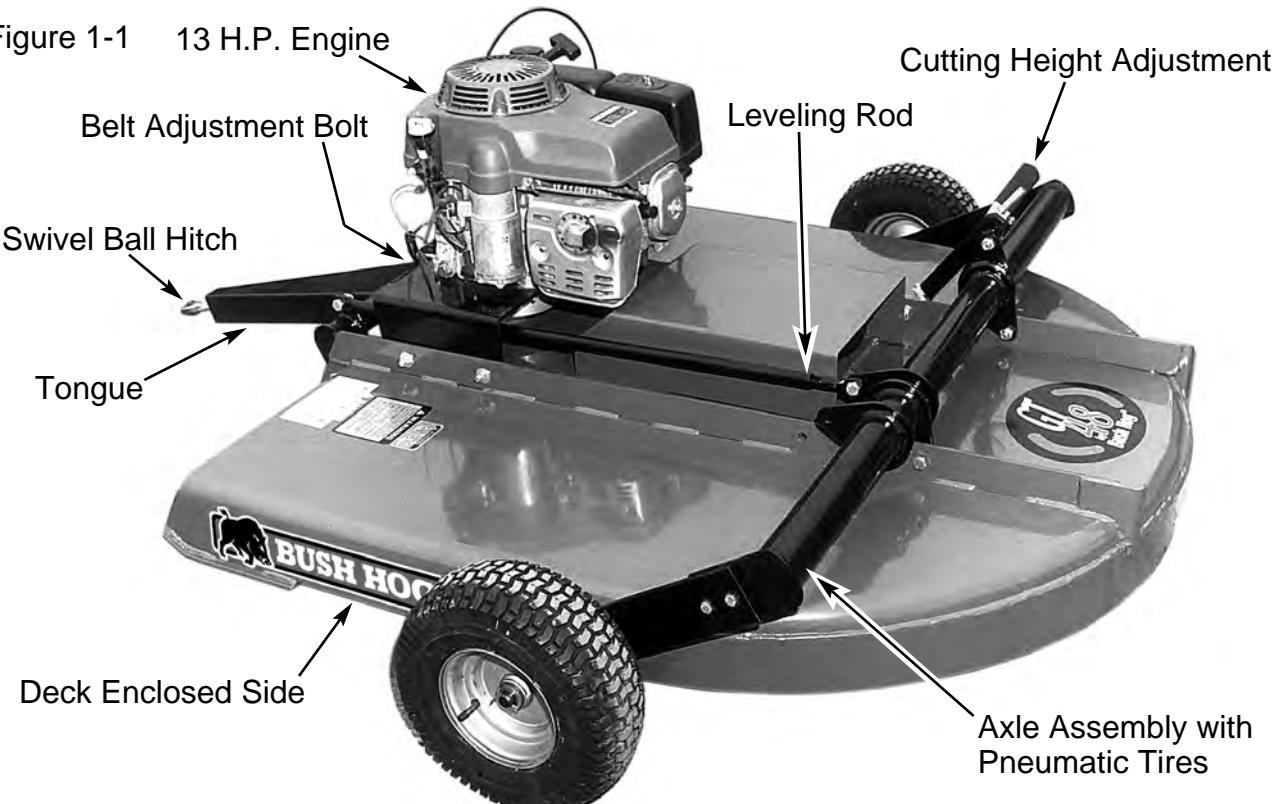
The cutter is powered by a vertical shaft, gasoline engine. Belt drive transfers power from the engine through a centrifugal clutch to the blade. Optional front and/or rear rollers may be installed to help prevent scalping on uneven terrain.

Table 1-1 Technical Specifications

Cutting Width	48"
Transport Width	64"
Cutting Height	1" - 6"
Cutting Capacity	3/4" Diameter
Type Hitch	Swivel Ball and Pin
Deck Thickness	11 Gauge
Wheels	13" x 5" Rib Solid Tire or 13.5" x 6" High Flotation Pneumatic
Drive	V-Belt, Kevlar Construction
Weight	425 lbs. With Wheels
Engine	13 H.P. Honda
Blade Tip Speed	16,450 fpm

NOTE: Electric start runs off ATV electrical system.

Figure 1-1 13 H.P. Engine



SECTION II OPERATION

2-1 GENERAL SAFETY

Only qualified people familiar with this operator's manual information should operate this machine. Operator should wear hard hat, safety glasses and safety shoes. Before beginning operation, clear work area of any objects that may be picked up and thrown. Check for ditches, stumps, holes or other obstacles that could upset tractor or damage cutter. Always stop cutter engine before crossing driveways, walkways, roads or gravel areas. Before leaving operator's seat turn off cutter engine and towing vehicle, set parking brake and wait for blade to come to a complete stop.

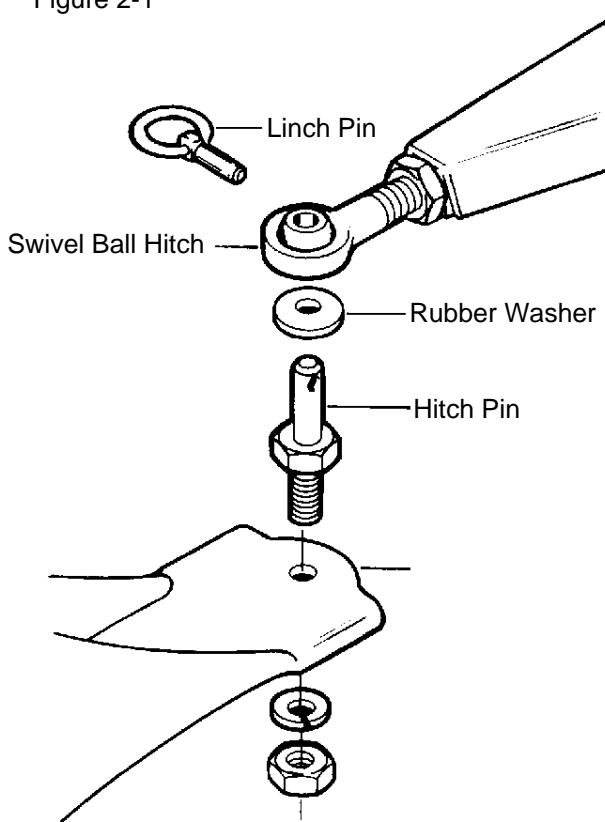
⚠ WARNING ⚠

**TO AVOID SERIOUS INJURY OR DEATH
ALWAYS STOP CUTTER ENGINE BEFORE
ATTACHING, DETACHING, OR MAKING
ANY ADJUSTMENT.**

2-2 ATTACHING TO TOWING VEHICLE

- A. Turn off engine and set parking brake of towing vehicle.
- B. Attach hitch pin to towing vehicle drawbar as shown in Figure 2-1.
- C. Slide rubber washer and mower swivel ball hitch onto hitch pin and secure with lynch pin.

Figure 2-1



2-3 CUTTING HEIGHT ADJUSTMENT

The cutter should be operated at the highest position which will give desired cutting results. This will help prevent blade from striking the ground, reducing blade wear and undue strain on the machine. For best results under heavier cutting conditions, always tilt the cutter so front is approximately 2 inches lower than rear. This tilt decreases horsepower requirements and increases potential ground speed. When fine shredding is desired, adjust cutter deck level. This will keep the foliage under cutter until thoroughly shredded. More power is required for shredding.

⚠ CAUTION ⚠

**TLTING CUTTER WILL INCREASE THE
POSSIBILITY OF A THROWN OBJECT.**

The cutting height is adjustable from 1 to 6 inches. Adjustment is made by turning handle shown in Figure 2-2.

The forward to rear tilt (slope) of the deck is adjusted with the leveling rod. Remove bolt securing leveling rod to axle. (Figure 2-3). Position cutter deck as desired. Adjust end of rod in or out as necessary to reconnect to axle. Fasten with bolt and nut until nut is snug, not tight.

Figure 2-2

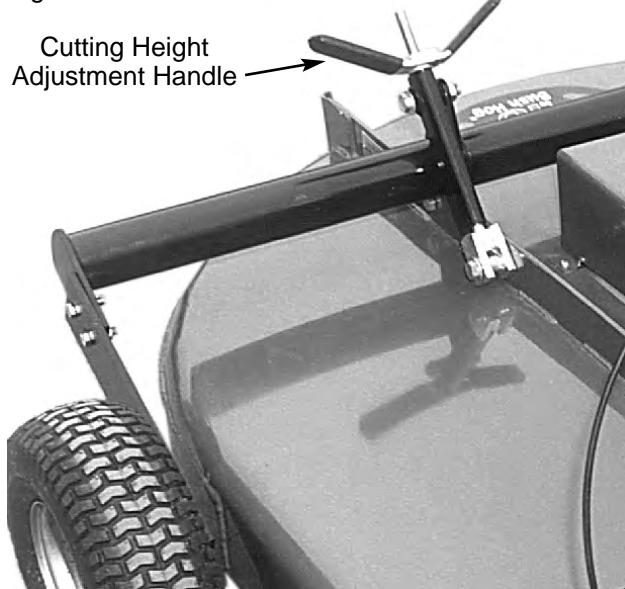


Figure 2-3 Leveling Adjustment Rod



Figure 2-4 Control Box Mounted On ATV Rack



2-4 ELECTRIC START CONTROL BOX MOUNTING

A. Attach mounting bracket to ATV rack using U-bolt. (Figure 2-4, 2-4A and Figure 4-2)

B. Mount control box to mounting bracket by inserting quarter-turn fasteners into clip-on receptacle and turn 90 degrees.

C. Disconnect battery pigtail from wiring harness.

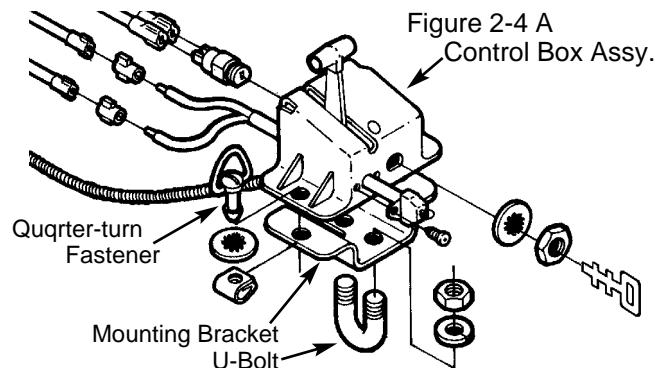
⚠ DANGER ⚠

FAILURE TO DISCONNECT BATTERY PIGTAIL FROM WIRING HARNESS BEFORE CONNECTING TO BATTERY IS EXTREMELY DANGEROUS. A WIRE TOUCHED TO THE WRONG TERMINAL COULD CAUSE A SPARK AND SUBSEQUENT BATTERY EXPLOSION.

D. Connect white wire from battery pigtail to negative terminal on battery. (Figure 4-2) Connect red wire to positive terminal.

E. Plug pigtail into wiring harness. If a spark is created when connection is made, disconnect immediately. Check to be sure all wires are connected properly.

F. Use a wire tie to secure battery pigtail to ATV rack.



A. Perform BEFORE EACH USE maintenance listed in paragraph 3-1.

B. Install kill switch plug. (Figure 2-5)

C. Open fuel valve.

D. Push throttle to CHOKE position. If engine is warm, place throttle in SLOW position.

⚠ DANGER ⚠

KEEP HANDS AND FEET AWAY FROM UNDERNEATH CUTTER TO AVOID SERIOUS INJURY. FOR MANUAL CRANKING PLACE ONE FOOT ON CUTTER DECK AND ONE FOOT FIRMLY ANCHORED ON GROUND SAFELY AWAY FROM UNDERNEATH.

E. (Manual Start) Place one foot on cutter deck and one foot firmly anchored on ground. Make sure foot on ground does not get underneath cutter. Pull starter cord briskly returning slowly until engine starts.

F. (Electric Start) Turn key to START position to activate starter. When engine starts, release key. The best starter life is provided by using short starting cycles of several seconds. Prolonged cranking of more than 15 seconds per minute can damage starter motor.

G. When engine is warm, adjust throttle to desired speed.

2-5 ENGINE STARTING

⚠ DANGER ⚠

DO NOT START CUTTER ENGINE UNLESS CUTTER IS SECURELY HITCHED TO TOWING VEHICLE. ACCIDENTAL UNHITCHING COULD CAUSE SERIOUS INJURY OR DEATH.

2-6 CUTTING

⚠ WARNING ⚠

ROTARY CUTTERS CAN DISCHARGE OBJECTS AT HIGH SPEEDS. TO AVOID SERIOUS INJURIES OR DEATH:

- **OPERATE ONLY WITH SIDE BANDS IN GOOD REPAIR.**
- **KEEP CHILDREN, PETS, AND BYSTANDERS AWAY FROM THE WORK AREA.**
- **DO NOT OPERATE CUTTER IN VICINITY OF OTHER PERSONS.**

A. Connect kill switch tether cord from switch through operator's belt loop (or equivalent) to towing vehicle forward of operator's seat. (Figure 2-5)

⚠ DANGER ⚠

NEVER OPERATE THIS MACHINE WITHOUT KILL SWITCH PROPERLY ATTACHED. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH.

B. Release parking brake.

C. Select lowest gear and begin cutting at a slow speed. Adjust speed to match terrain and grass thickness. When cutting thick grass, it may be necessary to adjust cutter lower in front to help prevent stalling. Care should be taken when turning sharply or backing that rear wheels of towing vehicle do not hit cutter. Cut up or down the face of slopes, not across the face.

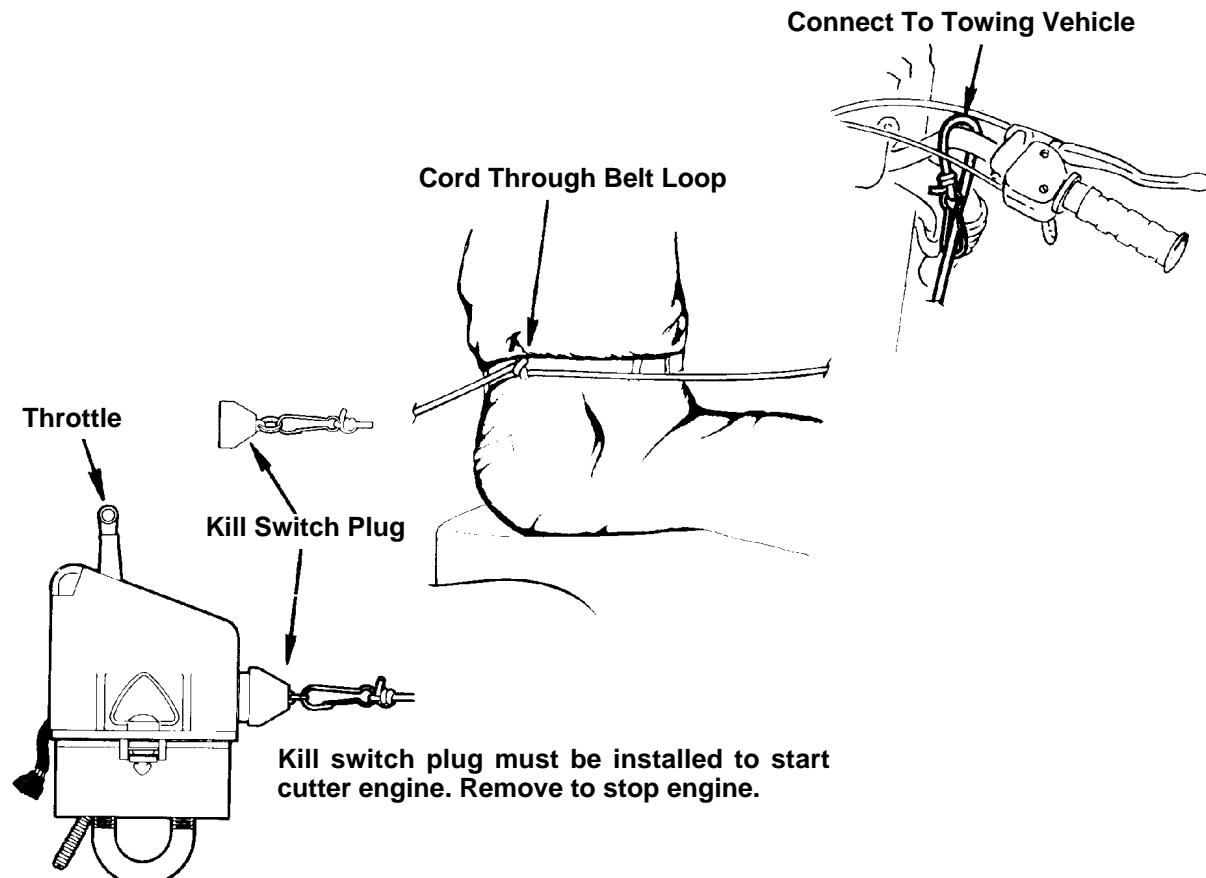
NOTE

Optional front and rear rollers are available to help prevent scalping on unlevel terrain.

2-7 ENGINE SHUTDOWN

- A. Apply parking brake.
- B. Pull out kill switch plug.
- C. Close fuel valve.

Figure 2-5 Kill Switch **Proper Use Of Safety Switch And Cord**



SECTION III MAINTENANCE

⚠ WARNING ⚠

BEFORE PERFORMING MAINTENANCE INSPECTIONS OR WORK ON CUTTER, SHUT CUTTER ENGINE OFF AND DISCONNECT SPARK PLUG WIRE. FAILURE TO DO SO COULD RESULT IN ACCIDENTAL STARTING OF ENGINE CAUSING POSSIBLE INJURY OR DEATH.

3-1 MAINTENANCE CHECK LIST

Perform scheduled maintenance as outlined below. Shut down engine, disconnect spark plug wire, and disconnect battery pigtail harness before doing maintenance inspections and work. For engine maintenance see Engine Owner's Manual. All bolts should be torqued as recommended in Torque Chart unless otherwise specified.

BEFORE EACH USE

1. Check engine oil level. Add oil as necessary per engine owner's manual.
2. Check engine fuel level, add as necessary. Allow engine to cool before filling. Use only approved funnel and container to handle gasoline. Do not fuel tank indoors. Wipe up spilled gasoline.
3. Inspect blade belt for tightness and wear. Tighten if necessary per paragraph 3-2.
4. Check blade for sharpness and damage. If dull, sharpen at a 45 degree angle on a bench grinder. Make certain blade is balanced before reinstalling. If blade is bent, broken, or worn out, replace with a genuine Bush Hog replacement blade.
5. Check blade bolts for tightness. Tighten $3/4 \times 2\frac{1}{4}$ " bolts to 297 ft./lbs. and the $1/2 \times 2$ " bolts to 76 ft./lbs.
6. Check blade bar nut for tightness. Tighten to 750 ft./lbs.
7. Make certain the cutter deck enclosed sides are not damaged, bent or missing. Make necessary repairs before operating cutter.
8. Make certain belt shield is in place and in good condition.
9. Clean any debris from the safety decals and check decals for legibility. Replace any missing or illegible decals. Read and heed the safety decal messages.

10. During operation, listen for abnormal sounds which might indicate loose parts, damaged bearings, or other damage. Repair or replace as necessary.

40 HOURS

1. Grease blade hub assembly using grease gun and multi-purpose grease until grease purges out top seal. Wipe away excess grease to prevent contact with belt.

3-2 BELT ADJUSTMENT

A. Remove belt shield.

B. Check belt tension as shown in Figure 3-1. If belt needs adjusting, proceed to step "C". If not, reinstall belt shield.

C. Loosen four bolts securing engine stand to deck weldment. (Figure 3-2)

D. Turn adjusting bolt located at front of engine stand clockwise to tighten belt, counterclockwise to loosen belt. Place enough tension on belt to allow not more than $1/2$ " and not less than $1/4$ " deflection. (Figure 3-1) If a belt tension gauge is available, set to 120 lbs. of tension.

E. Tighten four engine stand bolts.

F. Reinstall Shield.

3-3 REPLACING BELT

A. Remove belt shield. (Figure 3-2)

B. Loosen four bolts securing engine stand to deck weldment.

Figure 3-1
Belt Deflection

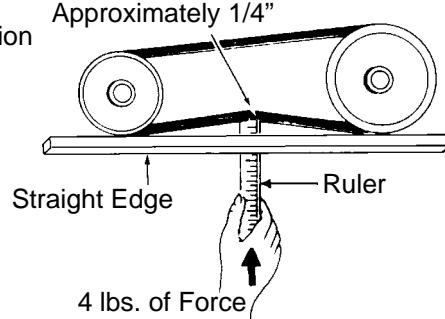
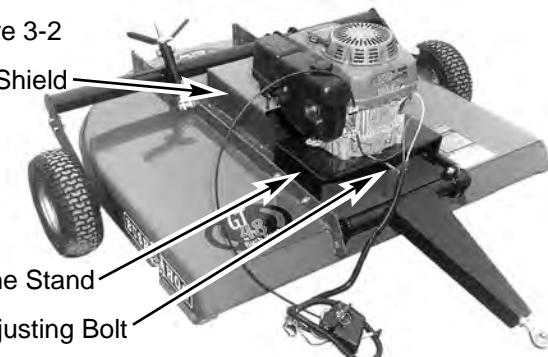


Figure 3-2

Belt Shield

Engine Stand

Adjusting Bolt



- C. Turn adjusting nut counterclockwise and slide engine rearward. Remove old belt.
- D. Install new belt onto pulleys. Do not pry belt onto pulley.
- E. Turn adjusting nut clockwise to tighten belt. Place enough tension on belt to allow not more than 1/2" and not less than 1/4" deflection.
- F. Tighten four engine stand bolts.
- G. Reinstall belt shield.

3-4 HUB BEARING REPLACEMENT

- A. Remove belt shield. (Figure 3-2)
- B. Loosen engine mount and remove belt.
- C. Loosen set screws and remove 7/16" bolt. Remove pulley from spindle. Do not lose key.
- D. Remove the six nuts securing hub assembly to deck.
- E. Remove upper nut to free spindle retaining nut. (Figure 3-3)
- F. Lift out bushing.
- G. Tap spindle out of hub.
- H. Remove grease seals and bearings.
- I. Check bearing cups inside hub for damage. If damaged, tap out cup(s), perform step "J" below, then insert new cup(s).
- J. Clean inside of hub with suitable solvent.

NOTE

Check to see if blade needs sharpening or replacing.

- K. Insert lower bearing and seal into hub.
- L. Install spindle into hub taking care not to damage grease seal.
- M. Insert upper bearing, seal and bushing into hub. Seal should be installed with metal face against bearing to allow grease to purge outward from bearing.
- N. Place nut onto spindle. Tighten nut until it takes 7-12 in.lbs. (.79 - 1.35Nm) to turn blade. To measure, place torque wrench on nut and turn blade while reading gauge. If nut is too tight, loosen nut two full turns; tap lightly on top of spindle, then retighten. After nut is tightened, install jam nut as shown.

NOTE

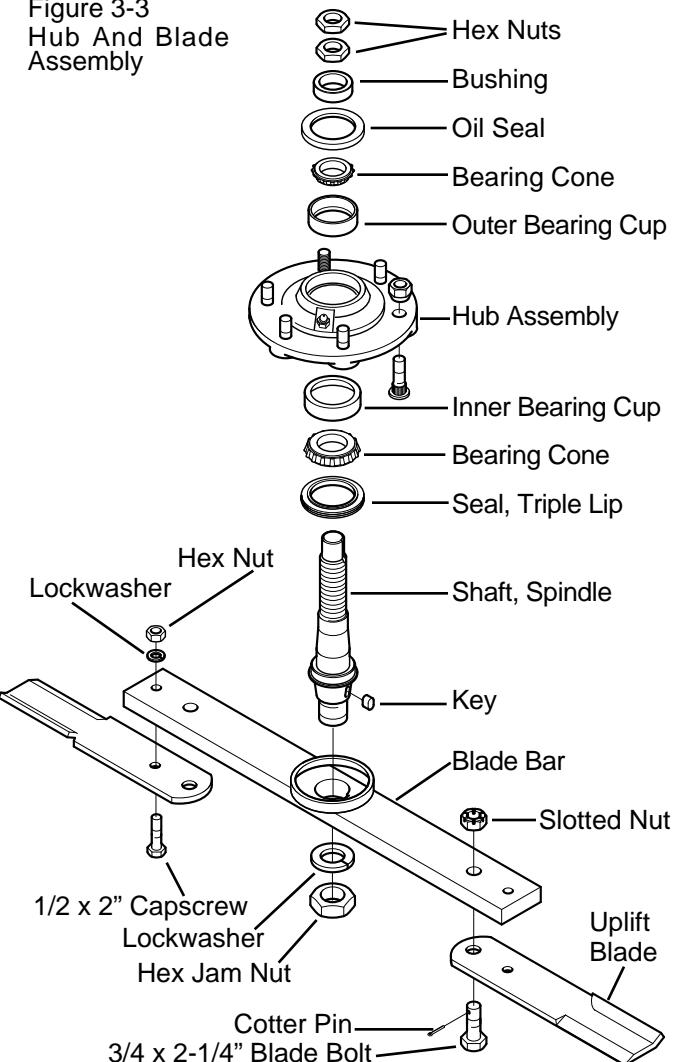
If a torque wrench is not available, tighten nut until there is no vertical movement in spindle. Make certain blade will spin freely.

- O. Using a grease gun, fill inside of hub with multi-purpose grease. Pump in through grease fitting until grease expels out of upper seal.
- P. Install hub assembly to deck and pulley to spindle.
- Q. Install belt and adjust per paragraph 3-2.
- R. Install belt shield.

3-5 BLADE REPLACEMENT

Remove old blades. Install new blades with uplift positioned as shown in Figure 3-3. Torque 3/4 x 2-1/4" bolts to 297 ft./lbs. and 1/2 x 2" bolts to 76 ft./lbs. Wear heavy gloves to protect hands.

Figure 3-3
Hub And Blade Assembly



3-6 TROUBLESHOOTING

Troubleshooting procedures are listed in Table 3-1 below. If the problem cannot be solved or replacement parts are necessary, contact your authorized Bush Hog dealer. Please have ready your machine name, model number, serial number, purchase date and exact cause or description of problem.

⚠ WARNING ⚠

BEFORE PERFORMING MAINTENANCE INSPECTIONS OR WORK ON CUTTER, SHUT CUTTER ENGINE OFF AND DISCONNECT SPARK PLUG WIRE. FAILURE TO DO SO COULD RESULT IN ACCIDENTAL STARTING OF ENGINE CAUSING POSSIBLE INJURY OR DEATH.

NOTE
Engine warranty, service and parts must be obtained through an authorized service center for Honda engines.

Table 3-1 General Troubleshooting

TROUBLE	PROBABLE CAUSE	REMEDY
Cutter engine stalls continuously	Cuttings not discharging	Tilt cutter forward
	Towing cutter fast	Increase cutter height
	Cutting height too low	Decrease speed
	Cutter engine speed too slow	Increase cutting height
	Engine malfunctioning	Increase speed
Not cutting grass	Loose or broken belt	Refer to engine owner's manual
	Clutch malfunctioning	Tighten /Replace
	Blade is dull	Contact your Bush Hog dealer
	Blade is upside down	Sharpen blade
Excessive belt wear	Blade is upside down	Reverse blade
	Pulleys misaligned	Align pulleys
	Incorrect belt tension	Adjust tension
Rapid blade wear	Excessive debris on deck	Keep clippings cleaned from top of deck
	Blades contacting ground	Increase cutter height
Uneven cut	Cutter not level	Level cutter
	Dull blade	Sharpen blade
	Engine not at full rpm	Increase rpm
	Blade upside down	Reverse blade
	Belt slippage	Tighten/Replace belt
Scalping	Cutter set too low	Increase cut height
	Uneven terrain	Install roller option

SECTION IV DEALER ASSEMBLY

⚠ CAUTION ⚠

**THE FOLLOWING SAFETY PRECAUTIONS SHOULD BE
THOROUGHLY UNDERSTOOD BEFORE ATTEMPTING
MACHINE ASSEMBLY.**

1. Wear protective equipment such as , but not limited to, protection for eyes, ears, feet, hands, lungs and head when assembling the equipment. Do not wear loose clothing or jewelry that may catch on equipment moving parts.
2. Do not lift heavy parts or assemblies. Use crane, jack, tackle, fork trucks, or other mechanical devices.
3. Select an area for assembly that is clean and free of any debris which might cause persons working on the assembly to trip.
4. Arrange parts to be assembled neatly in the work area and have tools or other mechanical assisting devices in easy reach.
5. Inspect all parts and assemblies thoroughly and remove any sharp edges, grease, oil, or dirt which might cause pieces to slip when handling.
6. Preview the assembly instructions in your operator's manual before proceeding further.
7. If the assembly instructions call for parts or assemblies to be blocked up, use only blocking material that is in good condition and is capable of handling the weight of the assembly to be blocked. Also insure that the blocking material is on a clean, dry surface.
8. Never put hands or any other part of body under blocked up assemblies if at all possible.
9. Always wear goggles or safety glasses when hammering, grinding or drilling metal parts.
10. If the assembly calls for welding or cutting, be sure that there are no flammable materials close at hand and the bystanders have taken necessary precautions.

AFTER COMPLETING ANY ASSEMBLY STEP, THOROUGHLY READ THE NEXT STEP IN THE ASSEMBLY INSTRUCTIONS BEFORE PROCEEDING WITH THAT STEP.

11. After completing assembly, thoroughly inspect the machine to be sure that all nuts, bolts, hydraulic fittings or any other fastened assemblies have been thoroughly tightened.
12. After completing assembly, be sure that all safety locking devices or guards are in place.
13. Before operating the machine, thoroughly read the operation section of this manual.
14. **Before operating, read the maintenance section of this manual to be sure that any parts requiring lubrication such as engines are full to avoid any possible damage.**

BEFORE OPERATING THE EQUIPMENT, IF YOU HAVE ANY QUESTIONS REGARDING THE PROPER ASSEMBLY OR OPERATION, CONTACT YOUR AUTHORIZED BUSH HOG DEALER OR REPRESENTATIVE.

4-1 BASE UNIT ASSEMBLY

A. Mount spindle weldment to axle weldment using four $1/2 \times 1-1/2$ " bolts and lock nuts. (Figure 4-1)

B. Mount axle assembly to frame using two $1/2 \times 1-1/4$ " bolts and locknuts (Figure 4-1). Nuts should be snug, not tight, to allow axle to pivot.

C. Assemble wheels onto axles in the following order: Two $3/4$ " flatwashers, wheel, one $3/4$ " flatwasher, and cotter pin.

D. Insert thread end of clevis rod into end of cuff weldment opposite bushing. Place two $1/2$ " flatwash-

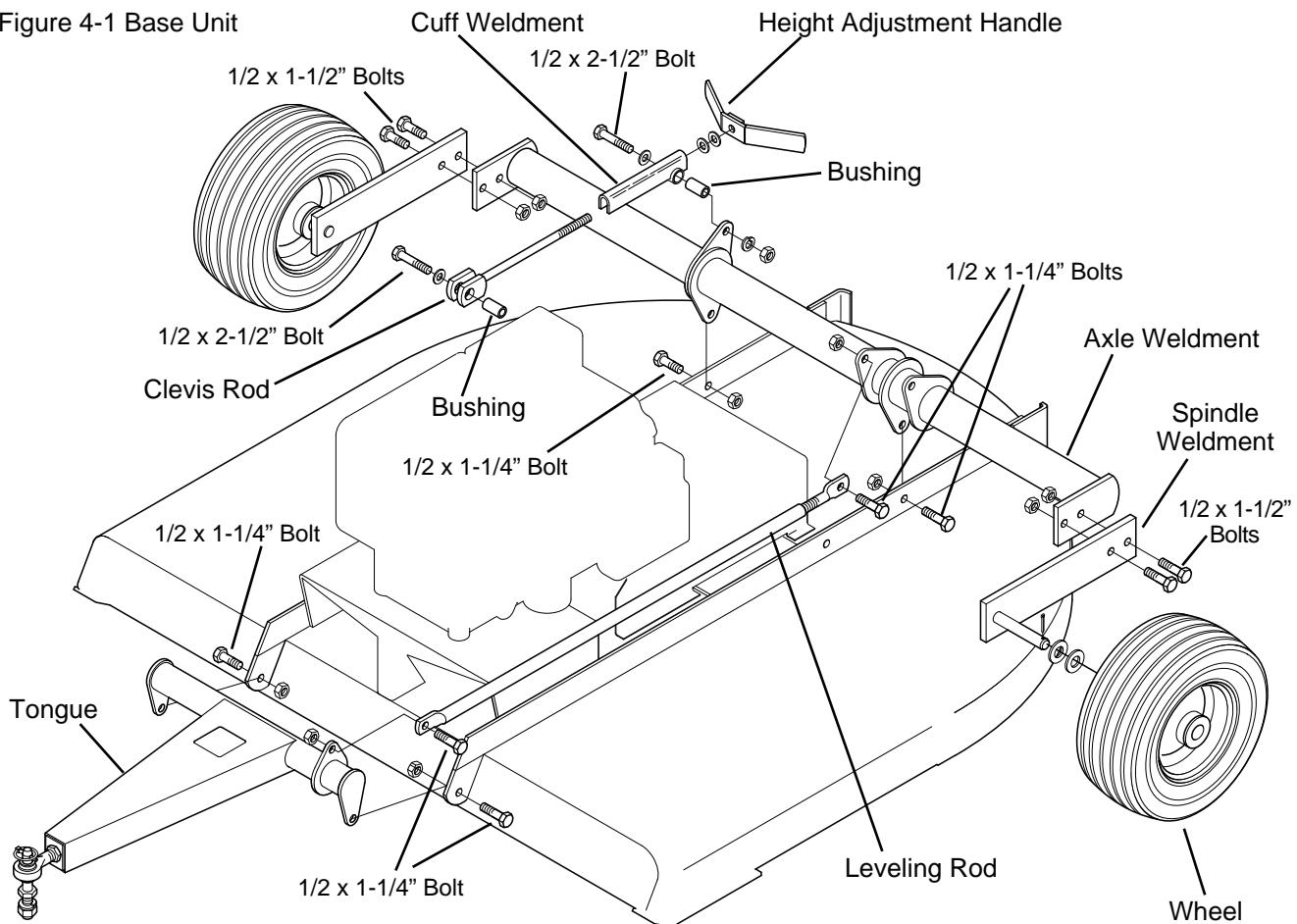
ers on clevis rod. Thread handle onto rod.

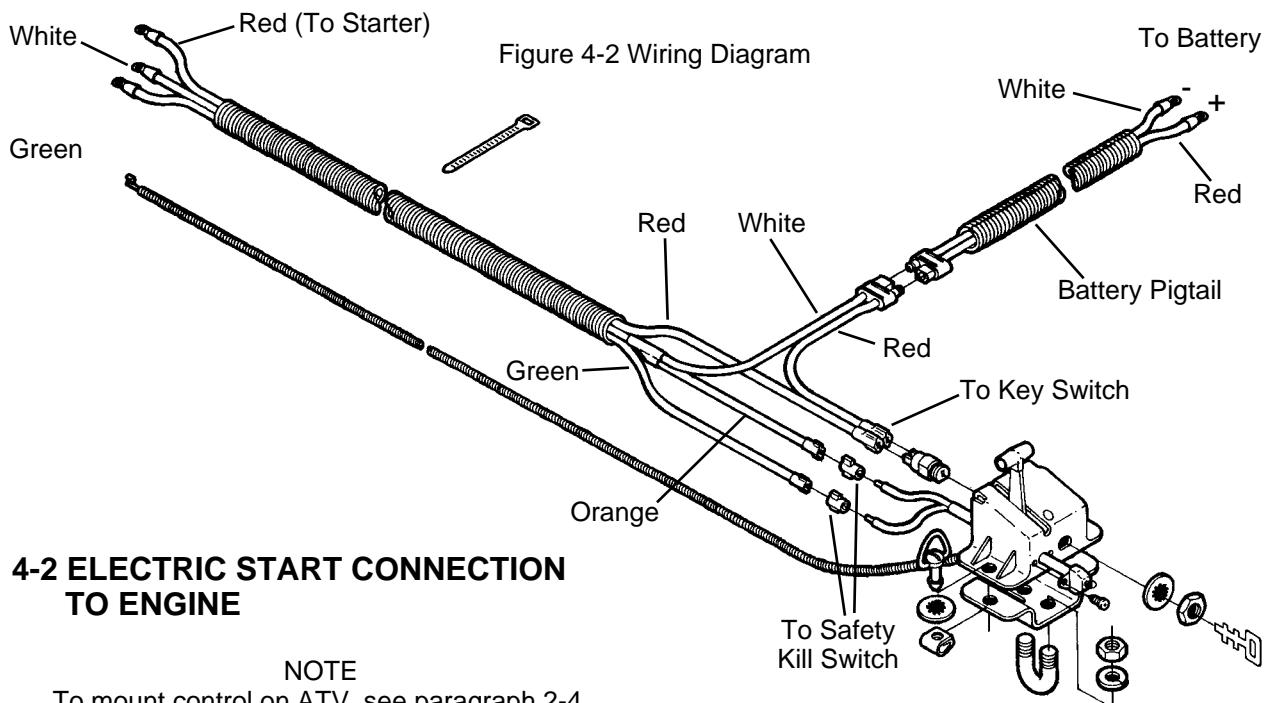
E. Fasten height adjustment assembly to axle and deck using two $1/2 \times 2-1/2$ " bolts, bushings, flatwashers, lockwashers and nuts.

F. Mount tongue to front of deck using two $1/2 \times 1-1/4$ " bolts and locknuts. Nuts should be snug, not tight, to allow tongue to pivot.

G. Attach leveling rod to tongue and axle using two $1/2 \times 1-1/4$ " bolts and locknuts. Nuts should be snug, not tight, to allow axle and tongue to pivot. If vehicle to be used for towing cutter is present, adjust the leveling bar during installation per paragraph 2-2.

Figure 4-1 Base Unit





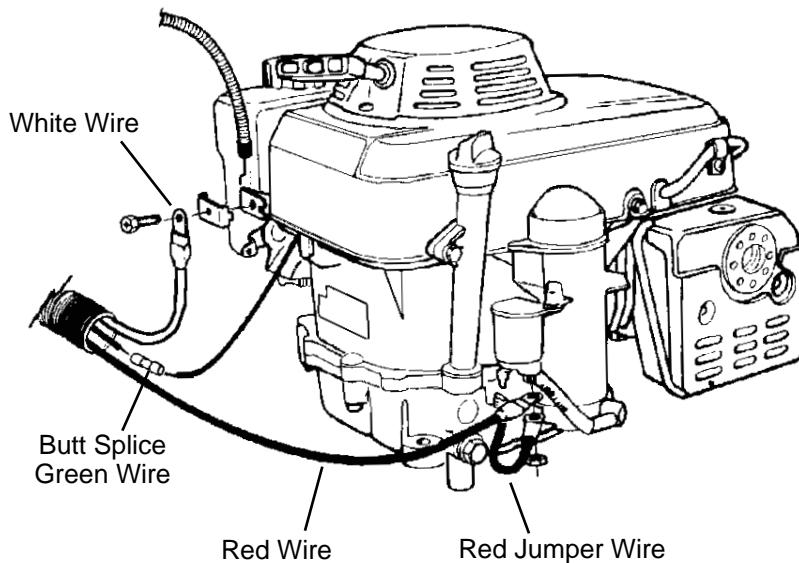
4-2 ELECTRIC START CONNECTION TO ENGINE

NOTE

To mount control on ATV, see paragraph 2-4.

- A. Cut ring connector from engine end of green wire in cutter wiring harness. (Figure 4-2) Strip 1/4" of insulation from end of green wire.
- B. Using butt splice, connect green wire from wiring harness to green wire lead next to engine throttle, crimping with pliers. (Figure 4-3)
- C. Attach white wire with loop connector as shown in Figure 4-3.
- D. Attach red wire with loop connector and short red jumper wire to post on engine starter solenoid. Attach opposite end of jumper wire to male prong on solenoid.
- E. Attach female terminals on end of jumper wires to key switch mounted in control box. Attach female terminal ends on green and orange wires to kill switch mounted in control box. (Figure 4-2)
- F. Push engine throttle down to limit of travel. Push remote throttle control to stop position. Insert cable into throttle. Place cable housing under cable clamp and tighten. (Figure 4-3)
- G. Plug battery pigtail into harness.
- H. Using wire ties, strap throttle control cable and wiring harness together.

Figure 4-3 Honda Engine



4-3 OPTIONAL FRONT ROLLER INSTALLATION (Figure 4-4)

Bolt rollers to deck front lip placing back plate on opposite side of deck lip. Bolts should be installed with head to underside of cutter.

4-4 OPTIONAL REAR ROLLER INSTALLATION (Figure 4-4)

Bolt roller to rear deck band placing back plate to underside of deck. Bolts should be installed with head to underside of cutter.

4-5 OPTIONAL BUMPER GUARD INSTALLATION (Figure 4-5)

Using bumper as a template, mark and drill 7/16" holes through side of deck. Bolt bumper to deck as shown with heads of bolts to the underside of deck.

4-6 OPTIONAL OFFSET TONGUE INSTALLATION (Figure 4-6)

Position mounting bracket along front edge of deck as shown and mark hole locations. Drill 7/16" holes through top and side of deck. Attach bracket to deck with bolts provided. Attach tongue to bracket and deck lug. The leveling rod must be moved from the center pull location to the outer lug on the axle assembly. Connect leveling rod between tongue lug and axle lug with threaded end to the rear. Nuts on tongue and leveling rod should be snug, not tight, to allow tongue and leveling rod to pivot.

Figure 4-5
Bumper Guard

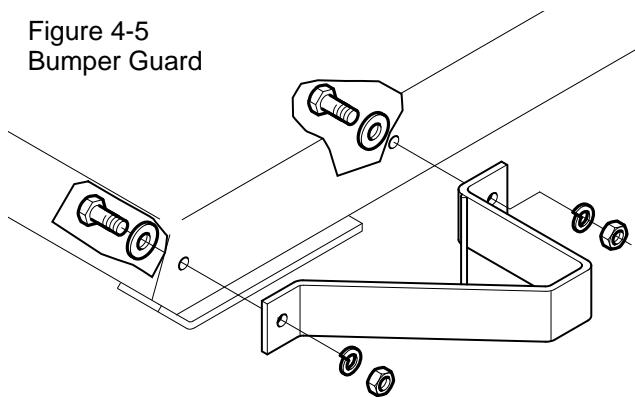


Figure 4-6 Offset Tongue

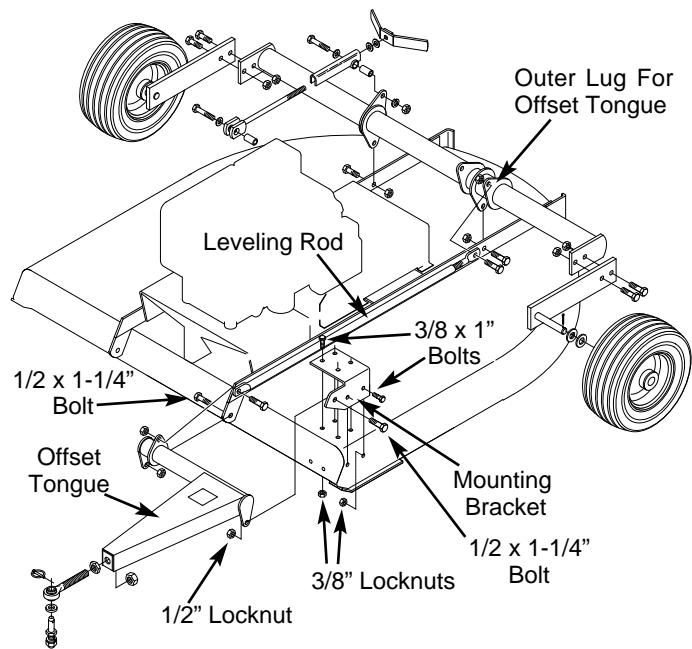
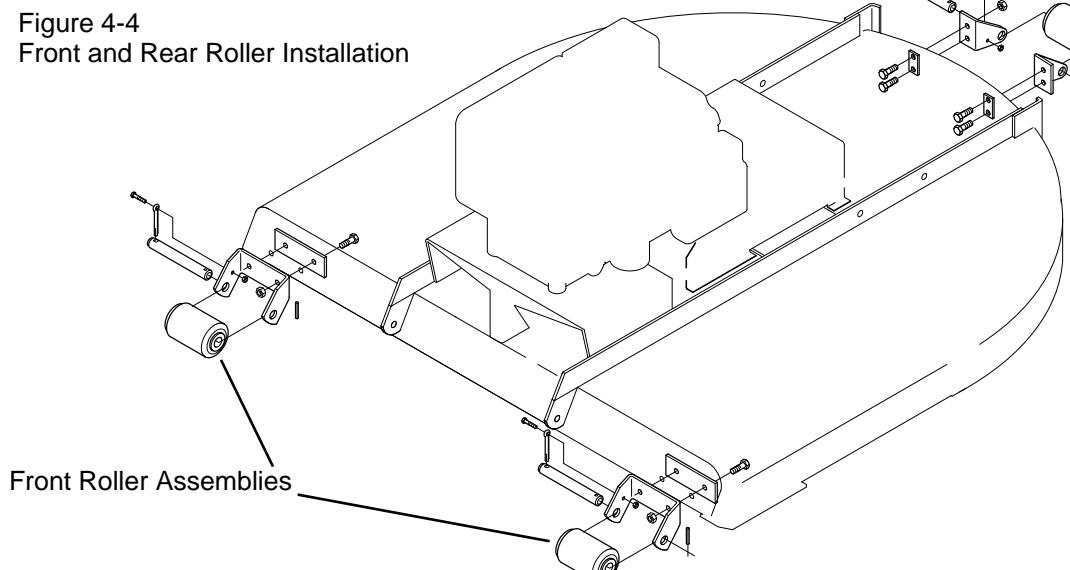
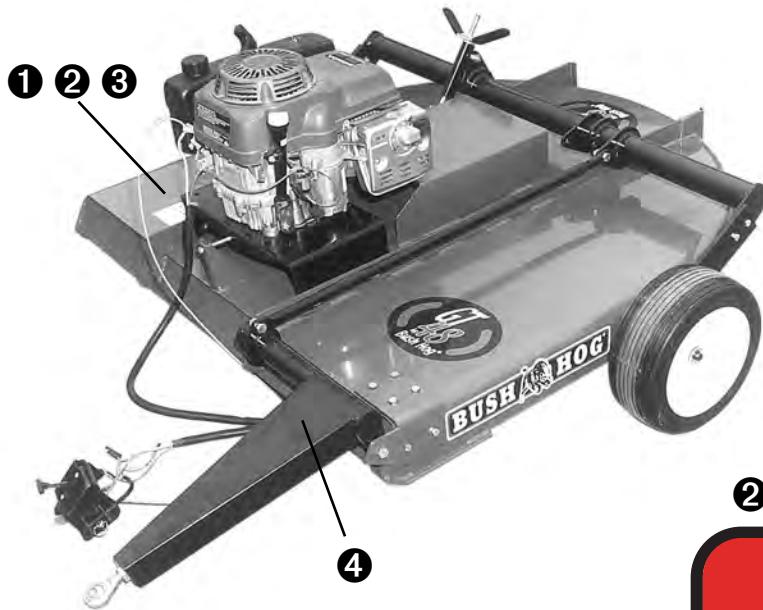


Figure 4-4
Front and Rear Roller Installation



SAFETY DECALS

To promote safe operation, Bush Hog supplies safety decals on all products manufactured. Because damage can occur to safety decals either through shipment, use or reconditioning, Bush Hog will, upon request, provide safety decals for any of our products in the field at no charge. Contact your authorized Bush Hog dealer for more information.



1

! WARNING

THE ENGINE EXHAUST FROM THIS PRODUCT CONTAINS CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.

96103

Part No. 96103

2

! DANGER



KEEP AWAY - ROTATING BLADES
SERIOUS INJURY OR DEATH CAN RESULT FROM THROWN OBJECTS OR BLADE CONTACT.

- DO NOT STAND ON OR NEAR MACHINE WHEN IN OPERATION.
- KEEP HANDS AND FEET AWAY FROM UNDERNEATH CUTTER TO AVOID SERIOUS INJURY.

81752

Part No. 81752

3

! WARNING

TO AVOID SERIOUS INJURY OR DEATH,

READ OPERATOR'S MANUAL BEFORE OPERATING.
ALLOW NO RIDERS ON IMPLEMENT OR VEHICLE.
ALLOW NO CHILDREN OR UNQUALIFIED PERSONS TO OPERATE EQUIPMENT.

KNOW HOW TO STOP VEHICLE AND EQUIPMENT QUICKLY IN AN EMERGENCY.

DO NOT MOW WITH CHILDREN OR OTHERS IN VICINITY.

ALWAYS STOP CUTTER ENGINE BEFORE DISMOUNTING AND BEFORE MAKING ANY ADJUSTMENTS.

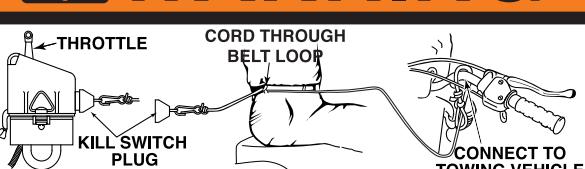
KEEP ALL SAFETY SHIELDS IN PLACE.

KEEP CLEAR OF DRIVES AND BELTS.

BE CAREFUL ON UNEVEN TERRAIN, DECREASE SPEED WHEN TURNING.

CLEAR MOWING AREA OF DEBRIS.

81754



- NEVER OPERATE THIS MACHINE WITHOUT THE KILL SWITCH PROPERLY ATTACHED. FAILURE TO DO SO COULD RESULT IN SERIOUS INJURY OR DEATH. REFER TO OPERATOR'S MANUAL FOR PROPER HOOK UP.
- SAFETY KILL SWITCH CORD SHALL BE ATTACHED TO OPERATOR AND TOWING VEHICLE.
- DO NOT OPERATE CUTTER ENGINE UNLESS CUTTER IS SECURELY HITCHED TO THE TOWING VEHICLE. STAND CLEAR OF ROTATING BLADES.
- SHOULD CUTTER BECOME UNCOUPLED FROM TOWING VEHICLE WHILE ENGINE IS RUNNING, KILL THE ENGINE WITH THE SAFETY SWITCH AND ALLOW THE CUTTER BLADE TO STOP TURNING BEFORE RE-ATTACHING.

81753

Part No. 81753

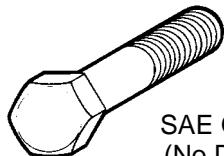
Part No. 81754

TORQUE SPECIFICATIONS

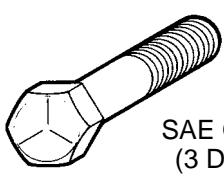
Proper torque for American fasteners used on Bush Hog equipment.
Recommended Torque in Foot Pounds (Newton Meters).*

AMERICAN

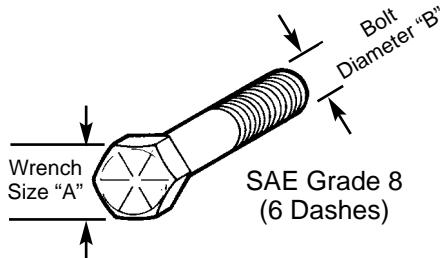
Bolt Head Markings



SAE Grade 2
(No Dashes)



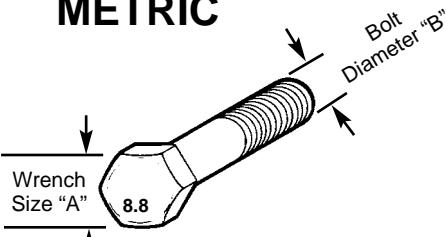
SAE Grade 5
(3 Dashes)



SAE Grade 8
(6 Dashes)

WRENCH SIZE (IN.) "A"	BOLT DIAMETER (IN.) "B" AND THREAD SIZE	SAE GRADE 2	SAE GRADE 5	SAE GRADE 8
7/16	1/4 - 20 UNC	6 (7)	8 (11)	12 (16)
7/16	1/4 - 28 UNF	6 (8)	10 (13)	14 (18)
1/2	5/16 - 18 UNC	11 (15)	17 (23)	25 (33)
1/2	5/16 - 24 UNF	13 (17)	19 (26)	27 (37)
9/16	3/8 - 16 UNC	20 (27)	31 (42)	44 (60)
9/16	3/8 - 24 UNF	23 (31)	35 (47)	49 (66)
5/8	7/16 - 14 UNC	32 (43)	49 (66)	70 (95)
5/8	7/16 - 20 UNF	36 (49)	55 (75)	78 (106)
3/4	1/2 - 13 UNC	49 (66)	76 (103)	106 (144)
3/4	1/2 - 20 UNF	55 (75)	85 (115)	120 (163)
7/8	9/16 - 12 UNC	70 (95)	109 (148)	153 (207)
7/8	9/16 - 18 UNF	79 (107)	122 (165)	172 (233)
15/16	5/8 - 11 UNC	97 (131)	150 (203)	212 (287)
15/16	5/8 - 18 UNF	110 (149)	170 (230)	240 (325)
1-1/8	3/4 - 10 UNC	144 (195)	266 (360)	376 (509)
1-1/8	3/4 - 16 UNF	192 (260)	297 (402)	420 (569)
1-5/16	7/8 - 9 UNC	166 (225)	430 (583)	606 (821)
1-5/16	7/8 - 14 UNF	184 (249)	474 (642)	668 (905)
1-1/2	1 - 8 UNC	250 (339)	644 (873)	909 (1232)
1-1/2	1 - 12 UNF	274 (371)	705 (955)	995 (1348)
1-1/2	1 - 14 UNF	280 (379)	721 (977)	1019 (1381)
1-11/16	1-1/8 - 7 UNC	354 (480)	795 (1077)	1288 (1745)
1-11/16	1-1/8 - 12 UNF	397 (538)	890 (1206)	1444 (1957)
1-7/8	1-1/4 - 7 UNC	500 (678)	1120 (1518)	1817 (2462)
1-7/8	1-1/4 - 12 UNF	553 (749)	1241 (1682)	2013 (2728)
2-1/16	1-3/8 - 6 UNC	655 (887)	1470 (1992)	2382 (3228)
2-1/16	1-3/8 - 12 UNF	746 (1011)	1672 (2266)	2712 (3675)
2-1/4	1-1/2 - 6 UNC	870 (1179)	1950 (2642)	3161 (4283)
2-1/4	1-1/2 - 12 UNF	979 (1327)	2194 (2973)	3557 (4820)

METRIC



Numbers appearing on bolt heads indicate ASTM class.

Proper torque for metric fasteners used on Bush Hog equipment.
Recommended torque in foot pounds (newton Meters).*

WRENCH SIZE (mm) "A"	BOLT DIA. (mm) "B"	ASTM 4.6	ASTM 8.8	ASTM 9.8	ASTM 10.9
8	5	1.8 (2.4)		5.1 (6.9)	6.5 (8.8)
10	6	3 (4)		8.7 (12)	11.1 (15)
13	8	7.3 (10)		21.1 (29)	27 (37)
16	10	14.5 (20)		42 (57)	53 (72)
18	12	25 (34)	74 (100)	73 (99)	93 (126)
21	14	40 (54)	118 (160)	116 (157)	148 (201)
24	16	62 (84)	167 (226)	181 (245)	230 (312)
30	20	122 (165)	325 (440)		449 (608)
33	22		443 (600)		611 (828)
36	24	211 (286)	563 (763)		778 (1054)
41	27		821 (1112)		1138 (1542)
46	30	418 (566)	1119 (1516)		1547 (2096)

*Use 75% of the specified torque value for plated fasteners. Use 85% of the specified torque values for lubricated fasteners.

⚠ WARNING ⚠

THE ENGINE EXHAUST FROM THIS PRODUCT CONTAINS CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.



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